

I claim:

1        1. A bifurcated stent for facilitating retrograde supply of oxygenated blood to heart  
2 tissue through a coronary sinus comprising:

3            a main covered stent having a main stent covered by a graft and defining an  
4 opening, and having a leading end, and a trailing end; and

5            a side limb having a side stent, wherein said side limb is in contact with said main  
6 covered stent about said opening.

1        2. The bifurcated stent according to claim 1, wherein said side stent is not attached  
2 to said main stent of said main covered stent.

1        3. The bifurcated stent according to claim 1, wherein said side limb further has a  
2 cuff that is attached to said graft of said main covered stent.

1        4. The bifurcated stent according to claim 3, wherein said cuff is attached by being  
2 connected to said graft.

1        5. The bifurcated stent according to claim 3, wherein said cuff is attached by being  
2 continuous with said graft.

1        6. The bifurcated stent according to claim 3, wherein said side stent is not attached  
2 to said main stent of said main covered stent.

1        7. The bifurcated stent according to claim 1, wherein said side stent is attached to  
2 said main stent of said main covered stent.

1        8. The bifurcated stent according to claim 7, wherein said side stent is attached by  
2 being connected to said main stent.

1        9. The bifurcated stent according to claim 7, wherein said side stent is attached by  
2 being continuous with said main stent.

1        10. The bifurcated stent according to claim 1, wherein cross section of said main  
2 covered stent varies along its extent.

1        11. The bifurcated stent according to claim 10, wherein said cross section of said  
2 main covered stent tapers toward said leading end and said trailing end.

1        12. The bifurcated stent according to claim 10, wherein said main covered stent  
2 exhibits a constriction near said leading end and a constriction near said trailing end.

1        13. The bifurcated stent according to claim 1, wherein said main covered stent has a  
2 constant cross section.

1        14. The bifurcated stent according to claim 1, wherein said side limb and said opening  
2 have similar cross section.

1        15. The bifurcated stent according to claim 1, wherein a cross section of said leading  
2 end is appropriately sized to control blood flow from said left ventricle into said main  
3 covered stent.

1        16. The bifurcated stent according to claim 1, wherein a cross section of said trailing  
2 end is appropriately sized to control blood flow into a right atrium.

1        17. The bifurcated stent according to claim 1, wherein cross section of said opening  
2 and said side limb are appropriately sized to control the amount of blood flowing into the  
3 retrograde portion of the coronary sinus.

1 18. The bifurcated stent according to claim 1, wherein cross section of said trailing  
2 end, said leading end, said opening, and said side limb are appropriately sized to prevent  
3 pressure level within said coronary sinus from rising above about 50 mm Hg.

1 19. The bifurcated stent according to claim 1, wherein cross section of said trailing  
2 end, said leading end, said opening, and said side limb are appropriately sized to prevent  
3 pressure level within the coronary sinus from rising above about half systemic pressure.

1 20. The bifurcated stent according to claim 1, wherein said trailing end, said leading  
2 end, said opening, and said side limb are each from about 1 mm to about 6 mm in  
3 diameter.

1 21. The bifurcated stent according to claim 20, wherein said trailing end, said leading  
2 end, said opening, and said side limb are each from about 2 mm to about 5 mm in  
3 diameter.

1 22. The bifurcated stent according to claim 1, wherein said side limb and said opening  
2 have similar cross section.

1 23. The bifurcated stent according to claim 1, wherein cross section of said side limb  
2 varies along its extent.

1 24. The bifurcated stent according to claim 1, wherein said side limb is from about 1  
2 mm to about 6 mm in diameter.

1 25. The bifurcated stent according to claim 1, wherein said main covered stent and  
2 said side limb allow compression and expansion.

1 26. The bifurcated stent according to claim 1, wherein said main covered stent and  
2 said side limb are flexible.

1 27. The bifurcated stent according to claim 1, wherein said main covered stent and  
2 said side stent are of mesh construction.

1 28. The bifurcated stent according to claim 1, wherein said main covered stent and  
2 said side stent are of coiled construction.

1 29. The bifurcated stent according to claim 1, wherein said main covered stent does  
2 not exceed from about 6 mm to about 12 mm in diameter.

1 30. The bifurcated stent according to claim 1, wherein said graft is inside said main  
2 stent.

1 31. The bifurcated stent according to claim 1, wherein said graft is outside said main  
2 stent.

1 32. The bifurcated stent according to claim 1, wherein said main stent is sandwiched  
2 between an inside graft and an outside graft.

1 33. The bifurcated stent according to claim 1, wherein said main covered stent  
2 expands and forms a friction fit.

1 34. The bifurcated stent according to claim 1, wherein a portion of said main stent  
2 near said trailing end is not covered by said graft.

1 35. A method for facilitating retrograde supply of oxygenated blood from a left  
2 ventricle to heart tissue via a coronary sinus comprising:  
3 puncturing a hole through said coronary sinus and a wall of said left ventricle,  
4 delivering a bifurcated stent having a main covered stent with a main stent  
5 covered by a graft and having a leading end and a trailing end; and a side limb having a  
6 side stent, wherein said side limb is in contact with said main covered stent about an

7 opening in said main covered stent,

8 wherein said opening is substantially aligned with a retrograde portion of said  
9 coronary sinus.

1 36. The method according to claim 35, wherein said leading end is positioned within  
2 said left ventricle.

1 37. The method according to claim 35, wherein an extension stent is used to reach  
2 said left ventricle.

1 38. The method according to claim 35, wherein said trailing end is positioned near a  
2 coronary ostium.

1 39. The method according to claim 35, wherein said trailing end is positioned in a  
2 right atrium.

1 40. The method according to claim 35, wherein said side limb is positioned toward a  
2 retrograde portion of said coronary sinus.

1 41. The method according to claim 35, wherein said main covered stent tapers cross  
2 sectionally toward the leading end and the trailing end.

1 42. The method according to claim 35, wherein said main covered stent expands to  
2 make a friction fit within said coronary sinus.

1 43. The method according to claim 42, wherein said friction fit prevents axial rotation  
2 and migration.

1 44. The bifurcated stent according to claim 35, wherein cross section of said trailing  
2 end, said leading end, said opening, and said side limb are appropriately sized to prevent  
3 pressure level within the coronary sinus from rising above about 50 mm Hg.

1 45. The bifurcated stent according to claim 35, wherein the cross section of said  
2 trailing end, said leading end, said opening, and said side limb are appropriately sized to  
3 prevent pressure level within the coronary sinus from rising above about half systemic  
4 pressure.

1 46. The bifurcated stent according to claim 35, wherein said side stent is attached to  
2 said main stent.

1 47. The bifurcated stent according to claim 35, wherein said side stent is not attached  
2 to said main stent, and said side stent is delivered after delivery of the main covered stent.

1 48. The bifurcated stent according to claim 35, wherein said bifurcated stent is  
2 delivered percutaneously.

1 49. A bifurcated stent for facilitating retrograde supply of oxygenated blood to heart  
2 tissue through a coronary sinus comprising:

3 a main covered stent having a main stent covered by a graft and defining an  
4 opening, and having a leading end and a trailing end, wherein said main covered stent  
5 tapers in cross sectionally toward said leading end and toward said trailing end, and

6 a side limb comprising a side stent, wherein said side limb is in contact with said  
7 main covered stent about said opening.